Learning Objectives

The learning objectives for this module include identifying:

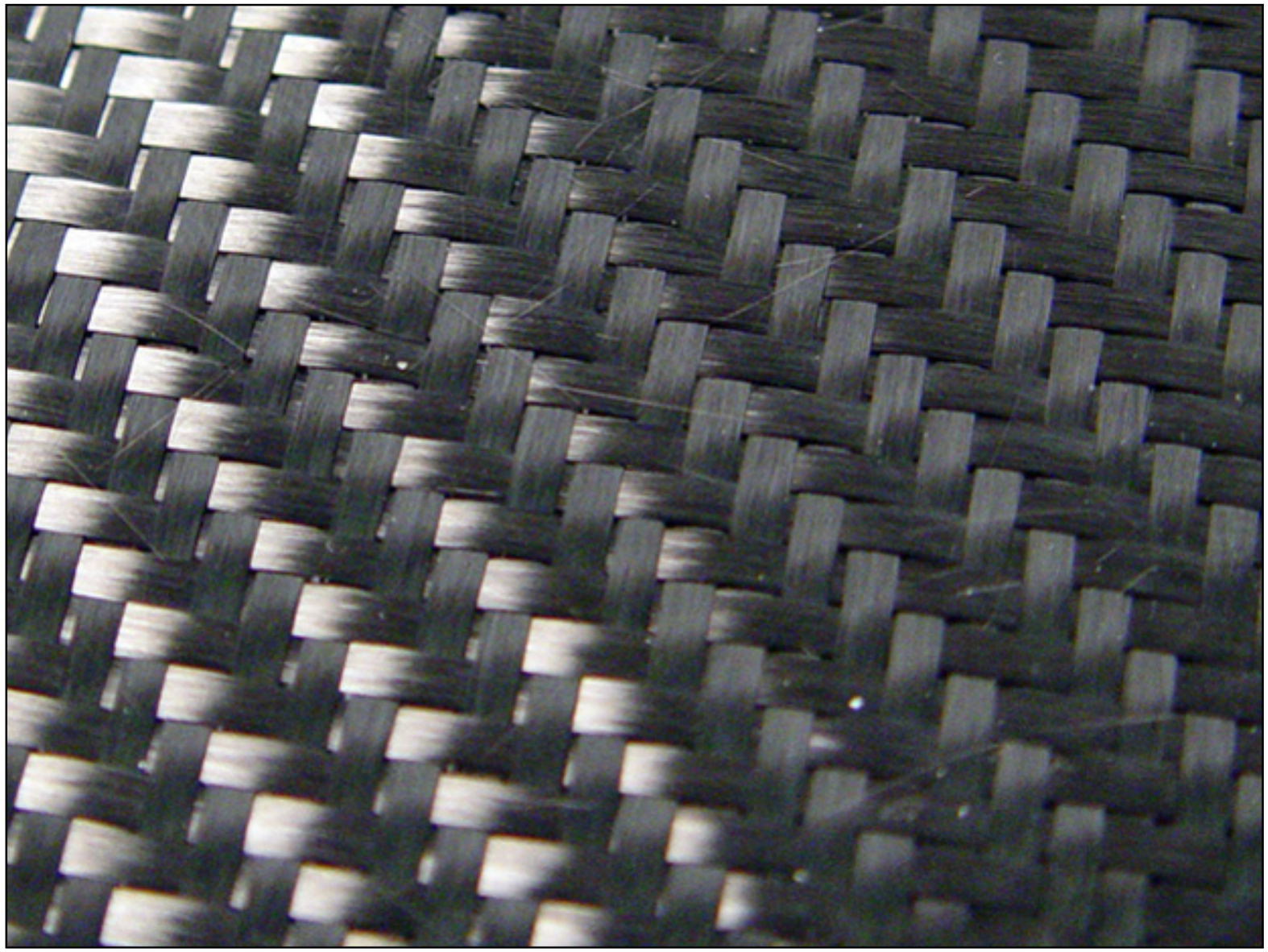
- **vehicle manufacturing trends that are continuing.**
- **innovations that may become trends in future models.**

Search For Lightweight Materials

CAR
CENTER FOR AUTOMOTIVE RESEARCH

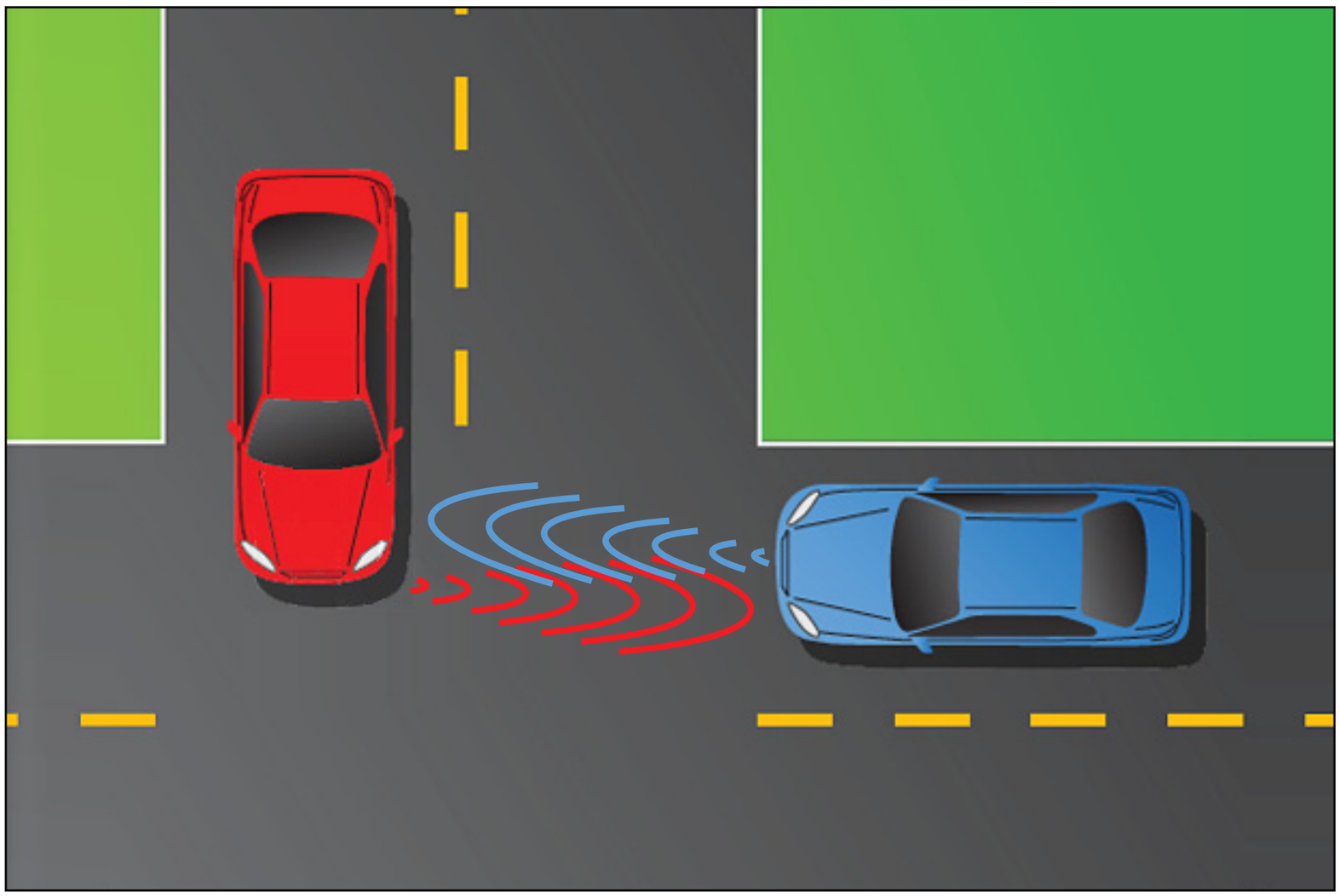
- **Coalition of Automotive Lightweighting Materials (CALM)**
  - **effort by the Center for Automotive Research (CAR)**
- **Aluminum and plastics industries working with vehicle makers**
- **200-plus companies**

Welcoming Carbon Fiber



- **Strongest, lightest material available, but expensive**
- **High production efforts underway**
- **Ford eyeing wide use by end of decade**
  - **teams with Dow Automotive Systems**

Vehicles Talking With Each Other



- NHTSA sees it as next major safety breakthrough
- Via wireless network
- Speed, location, direction, traffic lights, work/school zones
- To work, all vehicles must be equipped

Autonomous Vehicles By Decade End

Courtesy of BMW

- GM prediction, road testing
- BMW and Audi testing several vehicles
- Volvo testing
- States are authorizing legislation
- Technology exists

Video: Tech/Trends Trivia

Unplugged Hybrid Charging

Infiniti LE Concept

- Inductive charging
- Vehicle fitted with charging coil positioned over charging coil in ground automatically starts process
- Mercedes-Benz A-Class test run
- Volvo experimenting

New Lithium Battery

Chevrolet Spark

- Lithium-iron-phosphate
- 10% less energy than lithium-ion
- Lower chance of catching fire after severe collision
- Targeted for electric version of Chevrolet Spark

Electric Highways Opening

Nissan Leaf

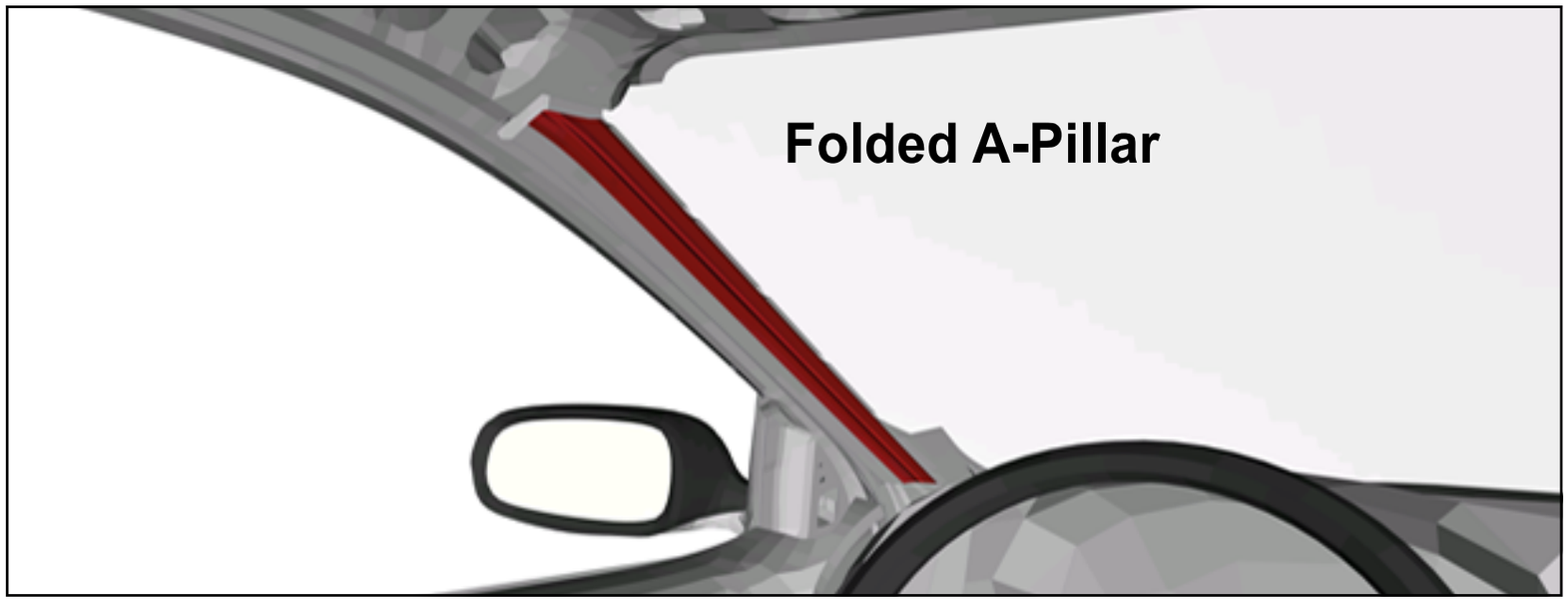
- Provides charging stations for vehicles like Nissan Leaf
- First phase of West Coast highway, I-5 in southern Oregon, open
- Eventually into Canada

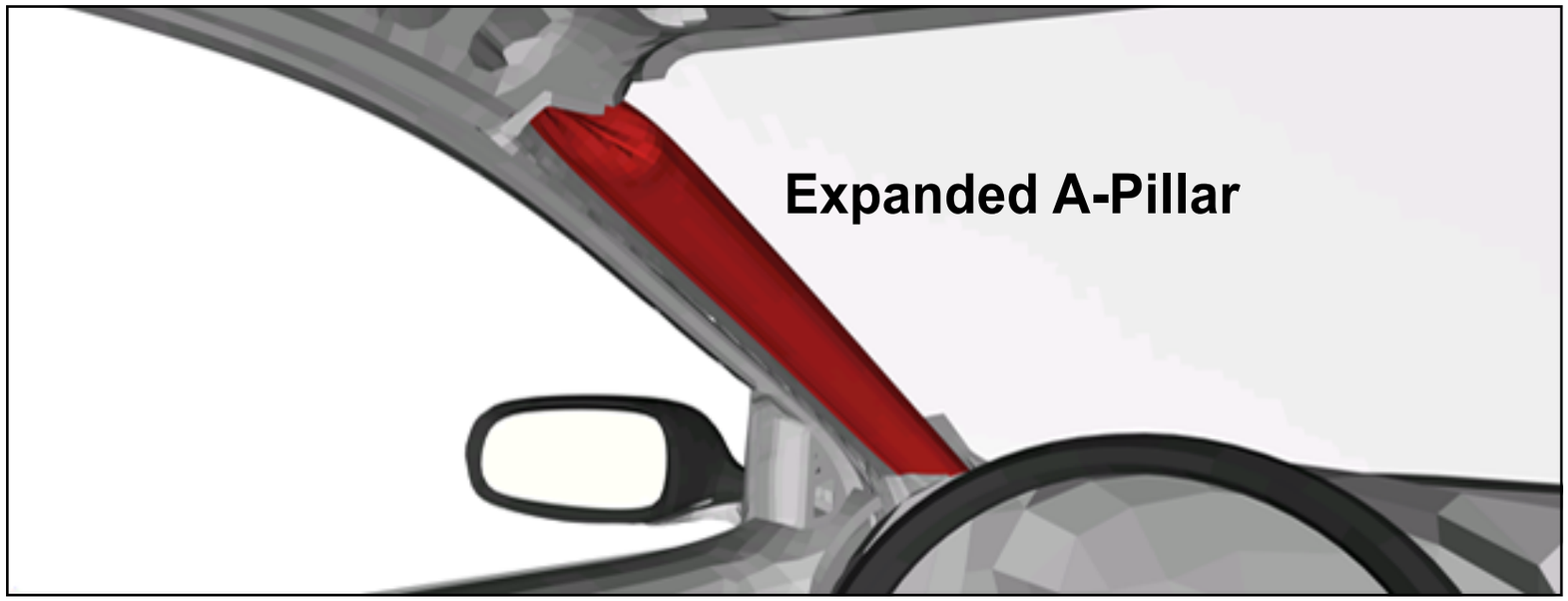
Video: Volvo "You" Concept

Future Of Drying

- Dries and cures in less than three minutes
- Now in Europe and Australia
- Coming to U.S. in 2014
- Concentrated infrared energy
- Programmed for different coatings

Expandable Upper A-Pillar





Courtesy of Autoliv

- Three-times thinner than normal
  - better view
  - lighter weight
- Deploys by the steel expanding and increasing stiffness 45%
- Proposed by airbag maker

VW Electronic Sun Visor

- Senses where sun is most blinding on driver's eyes
- Computer darkens only that section
- Technology similar to electrochromatic glass
- Special windshield

Moving B-Pillar On European Ford B-MAX

Courtesy of Ford Motor Company

- **B-pillars in hinged front and sliding rear doors**
- **Proven side-impact protection when doors are closed**
  - **140 physical crashes**

Video: Tech/Trends Trivia